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(56) Documents Cited

EP 0005556 A2

US 5884974 A

US 4657217 A

US 4163536 A

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LBSD LBSE LCC

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ONLINE: WPI, EPODOC, JAPIO

(54) Abstract Title

Arm support

(57) An arm support assembly 1 comprising a resilient support means 3 supporting arm locating means 5. The resilient support means 3 being operative to apply a returning force to the arm locating means on compression of the resilient support means. The assembly is arranged so that the supported arm can be moved from side to side and towards and away from the body. The assembly is adapted to be attached to the side of a chair. The resilient support means may comprise a gas spring 3 which in turn comprises an uppermost connecting rod 6 and a cylinder 7 and is pivotally mounted to the underside of an arm 4. The lowermost connecting rod 8 may be pivotally mounted to a side panel 2 by means of a ball and socket joint 10. The arm 4 may also be pivotally mounted to the side panel 2 by a ball and socket joint 11, which is located substantially vertically above the ball and socket joint 10. The arm locating means 5, which may comprise a channel which cups the elbow of the user, may be connected to the upperside of the arm by means of ball and socket joint 12.

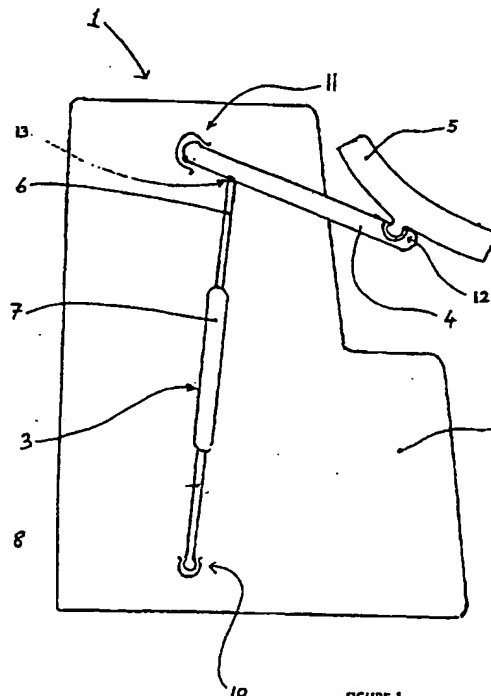
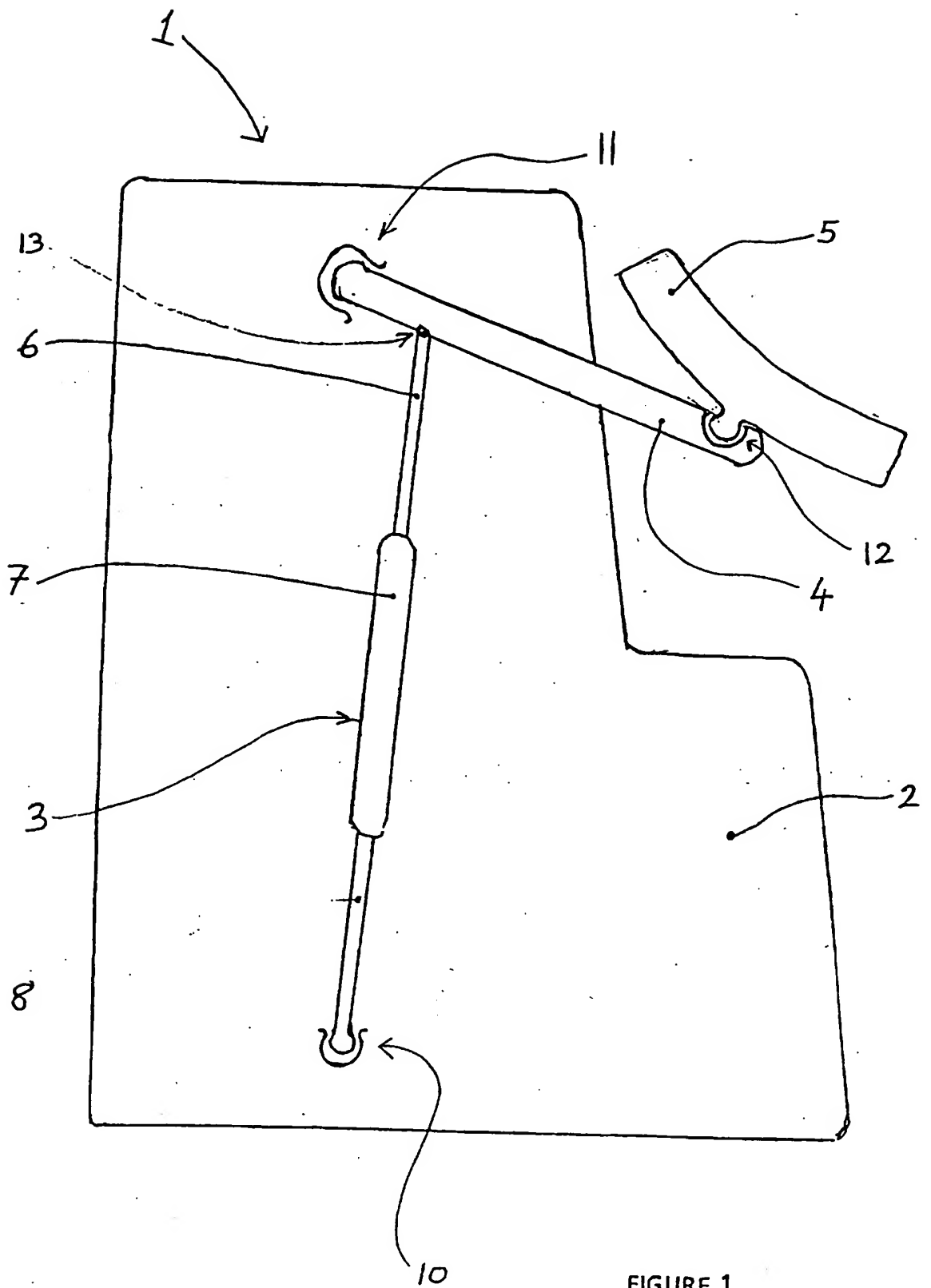


FIGURE 1



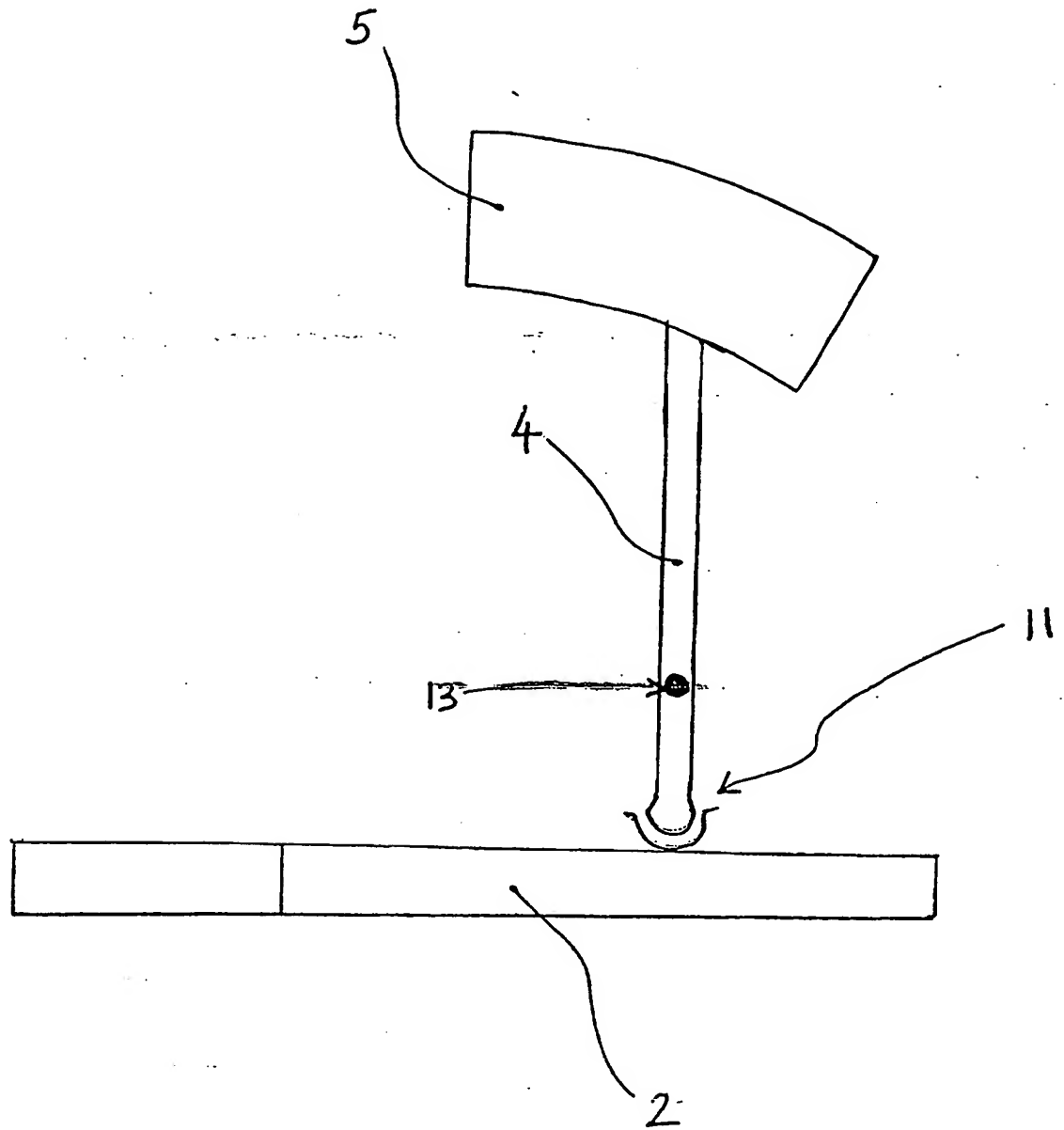


FIGURE 2

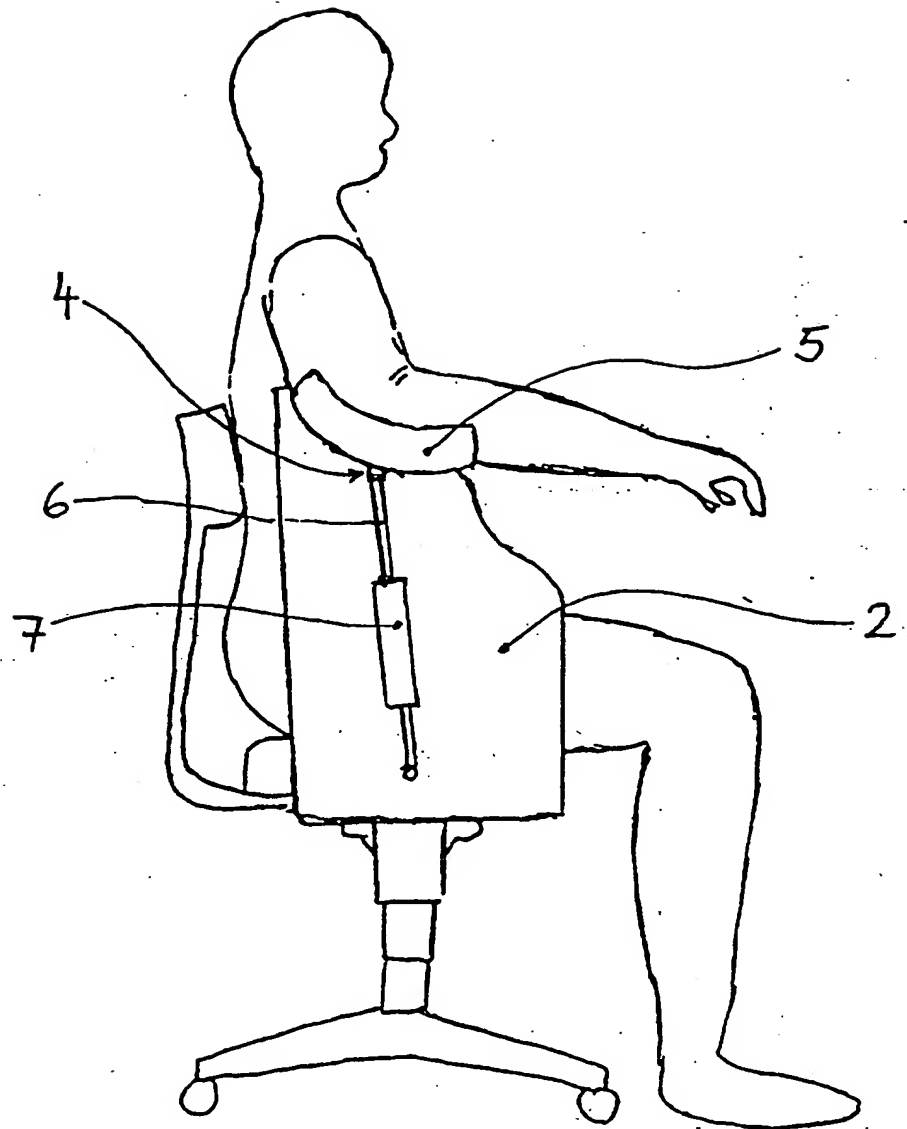


FIGURE 3

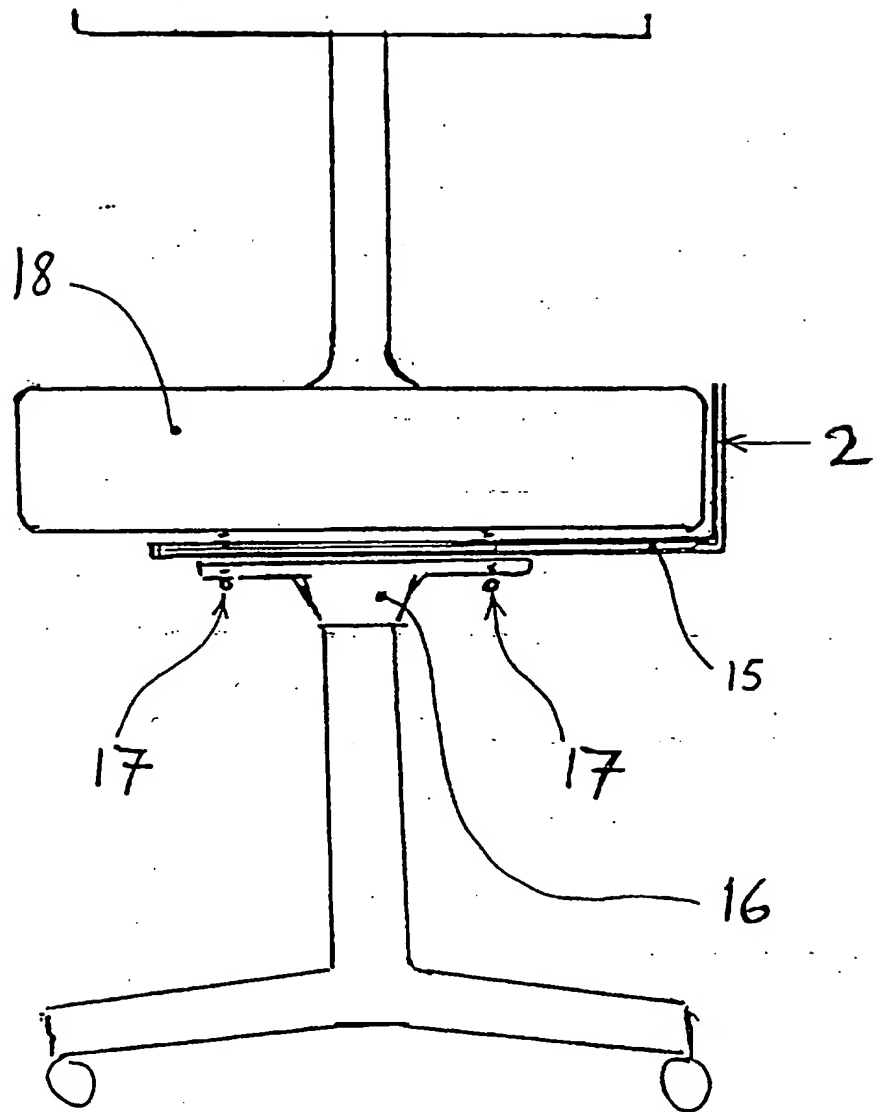


FIGURE 4

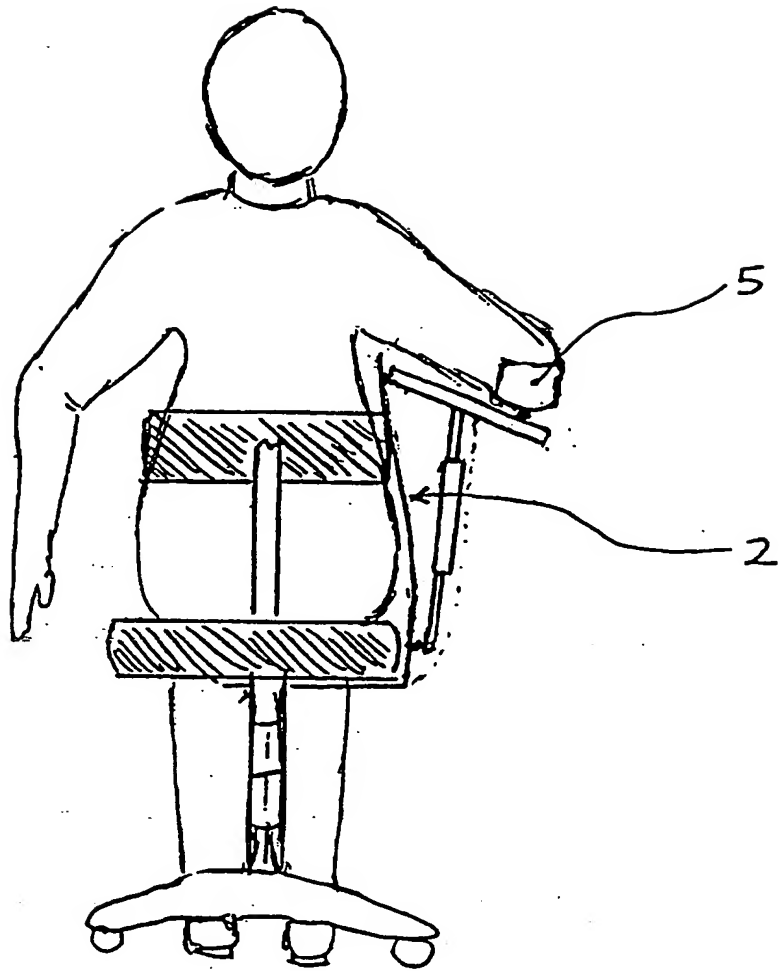


FIGURE 5

## ARM SUPPORT

This invention relates to arm support assemblies.

Back, neck, shoulder and arm problems can often arise as a result of repetitive work which is conducted from a seated position, for example  
5 operatives of ultrasonic scanning equipment may suffer such problems. Many of these problems are due to incorrect posture and body position and in particular neck, shoulder and arm problems are caused by constant abduction of the arm and the weight of the arm in an abducted position. The invention aims to alleviate these problems.

10 According to the first aspect of the invention there is provided an arm support assembly comprising arm-locating means and resilient support means, the arm-locating means being adapted to locate at least part of a human arm, the resilient support means at least partially supporting the arm-locating means and being operative to apply a returning force to the  
15 arm-locating means on compression of said resilient support means, the arm-locating means being adapted to be mounted with respect to the body of the user of the assembly, and so arranged as to enable the supported arm to be moved from side-to-side and towards and away from the body.

20 Preferably the arm-locating means comprises a channel portion which is adapted to cup at least part of a human arm.

Preferably the arm-locating means is adapted to locate the elbow.

Preferably the assembly is adapted to be attached to the side of a chair so that an arm of a person sitting in the chair is supported by the assembly and generally to the side of the seated person.

Preferably the resilient support means comprises a gas spring.

According to the second aspect of the invention there is provided a chair which is provided with the arm support assembly of the first aspect of the invention.

- 5 The invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic side elevation of an arm support assembly,

Figure 2 is a schematic plan view of the arm support assembly shown in Figure 1 but with the assembly in a different orientation,

- 10 Figure 3 is a schematic side elevation of a seated person using the arm support assembly shown in Figures 1 and 2,

Figure 4 is a side elevation of a chair which shows how the arm support assembly of Figures 1, 2 and 3 is attached to the chair, and

- 15 Figure 5 is a rear elevation of the assembly and seated person of Figure 3.

Figure 1 shows an arm support assembly 1 which is adapted to be fixed to the side of a chair. The assembly 1 comprises a side panel 2, resilient support means 3, a mechanical arm 4, and arm-locating means 5.

- 20 The arm-locating means 5 comprises a channel portion 5 which cups the elbow of the user and some of the user's arm each side of the elbow.



The resilient support means 3 comprises a gas spring 3 which in turn comprises an uppermost connecting rod 6, a cylinder 7 and a lowermost connecting rod 8. The uppermost connecting rod 6 is capable of reciprocal movement within cylinder 7 and is pivotally mounted to the underside of the arm 4. The lowermost connecting rod 8 of the gas spring 3 is pivotally mounted on the side panel 2 by means of a ball-and-socket joint 10.

The arm 4 is pivotally mounted at one distal end to the side panel 2 by means of ball-and-socket joint 11 which is located substantially vertically above the ball-and-socket joint 10. The arm-locating channel 5 is pivotally mounted by means of ball-and-socket 12 on the upperside of arm 4 towards the opposite distal end thereof.

The arm-locating channel 5 is of a slightly curved profile when viewed in plan and sideways on (as seen in ~~Figures 2 and 3~~ respectively). This curvature of the channel 5 is designed to provide sufficient support to the distal upper arm and elbow and to the proximal forearm, and suitably position the arm of the user. The arm-locating channel 5 is preferably constructed from moulded glass-reinforced plastics.

The gas spring 7 is used to support the weight of the arm and allow downward movement by compression of the gas spring on the application of a small applied pressure. On the disengagement of the applied pressure the connecting rod 6 is slowly urged out of the cylinder 7 and returns to the relatively uncompressed, neutral condition.

Figure 4 shows the arm support assembly 1 attached to a standard office chair. The side panel 2 is rigidly connected to an attachment panel 15 which extends orthogonally from said panel. The attachment panel 15 is provided with a number of holes (not shown) through which pins 17 pass so

as to sandwich the attachment panel 15 between chair seat 18 and stem bracket 16.

In use the assembly 1 operates as follows. A user sits in a seat which is provided with the arm support assembly 1 and places his or her elbow in  
5 the arm-locating channel 5 to adopt the position shown in Figure 3. Then user can then start working with the arm that is supported in the arm-locating channel 5, for example to conduct an ultrasonic scan using a hand-held scanning head, or extensive computer mouse work.

The side panel 2 is desirably contoured to the side profile of the body of  
10 the user as shown in Figure 5. The shaping of the side panel 2 optimises support for the lower back and reduces strain on muscles and sacro-iliac joints.

Advantageously, the arm support assembly 1 allows a wide range of movement of the arm whilst supporting the weight of the abducted arm,  
15 thus helping to reduce muscle strain. Moreover, the arm support assembly should encourage the adoption of an improved posture, reduce the strain on the lower back and prevent twisting and leaning which causes strain on the sacro-iliac joints. The assembly will, in fact, be of great value to those  
20 who carry out work which requires repetitive upper arm abduction, for example, design and computer work.

The assembly would of course be tailored to the specific requirements of a particular type of work.

## CLAIMS

1. An arm support assembly comprising arm-locating means and resilient support means, the arm-locating means being adapted to locate at least part of a human arm, the resilient support means at least partially supporting the arm-locating means and being operative to apply a returning force to the arm-locating means on compression of said resilient support means, the arm-locating means being adapted to be mounted with respect to the body of the user of the assembly, and so arranged as to enable the supported arm to be moved from side-to-side and towards and away from the body.
2. An arm support assembly as claimed in claim 1, wherein the arm-locating means comprises a channel portion which is adapted to cup at least part of a human arm.
3. An arm support assembly as claimed in claim 1 or claim 2, wherein the arm-locating means is adapted to locate the elbow.
4. An arm support assembly as claimed in any one of claims 1 to 3, wherein the assembly is adapted to be attached to the side of a chair so that an arm of a person sitting in the chair is supported by the assembly and generally to the side of the seated person.
5. An arm support assembly as claimed in any one of the preceding claims, wherein the resilient support means comprises a gas spring.
6. An arm support assembly substantially as herein described with reference to the drawings.
7. A chair which is provided with the arm support assembly as claimed in any one of the preceding claims.



Application No: GB 0004100.4  
Claims searched: 1-7

Examiner: Chris Archer  
Date of search: 5 June 2000

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.R): A4L (LBLC, LBLD, LBSA, LBSB, LBSC, LBSD, LBSE, LCC)  
Int CI (Ed.7): A47C (1/03, 7/54, 7/68)  
Other: ONLINE: WPI, EPODOC, JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
Y	EP 0005556 A2 (INT'L STANDARD ELECTRIC) see in particular Fig. 1	1-7
Y	US 5884974 (INDUSTRIAL ERGONOMICS) see in particular figures 1 and 2	1-7
Y	US 4657217 (SIEMENS) see in particular Fig. 2	1-7
X	US 4163536 (HELLER) see in particular Fig. 1	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.